REMARKS

Reconsideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested.

When the parent of this FWC application was originally filed on August 31, 1995, it was accompanied with an Information Disclosure Statement PTO-Form 1449 listing the Japanese document enclosed therewith However, to date, an initialed and dated copy of that PTO-1449 has not been returned to the undersigned. So that it is clear that the Examiner has considered that citation and the English abstract enclosed therewith, please now return an initialed and dated copy of the August 31, 1995 Form PTO-1449.

In the Official Action, claims 1-4 were rejected under 35 U.S.C. 102(b) as anticipated by Csanitz. Applicant respectfully traverses this rejection.

In Csanitz, granules 39 are provided on the surface of a heater 24 to transmit heat to a solid electrolyte and an internal electrode. Thus granules 39 are used as a heat conductor and are not used for forming a high-emissivity layer. Therefore, in Csanitz, heat is transmitted from the heater to the solid electrolyte by using the heat conducting effect of the granules of alumina without using a heat-radiating effect. Thus, the granules must have high heat conductivity. However, claim 1 of this application is characterized in particular in that a high-emissivity layer is formed on at least one of the internal surface of the sensor element and the surface of the heater and that a clearance is formed between the high-emissivity layer and the internal electrode, that clearance being 0.1 mm or more. Heat is transmitted from the heater to the solid electrolyte to heat the solid electrolyte by using a heat-radiating effect of the high-emissivity layer. Accordingly, the high-emissivity layer of the present invention is

for effectively using the heat radiated from the heater. Such a structure is not taught or suggested by Csanitz. Reconsideration and withdrawal of the rejection of claims 1-4 as anticipated by Csanitz is solicited.

Claims 4, 18 and 19 were rejected under 35 U.S.C. 103 as unpatentable over Csanitz. Applicant respectfully traverses this rejection as well.

In accordance with the present invention, the heat from the heater is readily received by the surface roughness formed on a high-emissivity layer. This characteristic is limited to the case where the solid electrolyte is heated by radiating heat from the heater. In Csanitz, heat is transmitted from the heater to the solid electrolyte through the alumina granules. Thus, the heat transmitting mechanism in Csanitz is completely different from that in the structure claimed by Applicant. Therefore, the surface roughness of the present invention is not obviously nor easily be derived from Csanitz. Similarly, the claimed thickness and porosity of the high-emissivity layer are not easily derived from Csanitz. Indeed, the limitations in these claims are not anticipated by nor obvious from Csanitz in the absence of Applicant's disclosure.

Reconsideration and withdrawal of this rejection is solicited.

Claims 1-4, 6-8, 18 and 19 were rejected as unpatentable over Togawa et al. in view of Sakurai. Applicant respectfully traverses this rejection.

Neither Togawa nor Sakurai teach or suggest the characteristics of the invention set forth in claims 1 and 6, in which the high-emissivity layer is provided on the surface of the internal electrode or the surface of the heater, or that the electrode contains a material having a high-emissivity of more than 0.3. Thus, even if Togawa could be combined with Sakurai,

the unique features of the invention set forth in these claims, whereby heat is transmitted from heater to the solid electrolyte to heat the solid electrolyte by using a heat-radiating effect of the high-emissivity layer, would still not be anticipated nor obvious. Reconsideration and withdrawal of this rejection is therefore solicited.

Claim 5 was rejected under 35 U.S.C. 103 as unpatentable over Csanitz in view of Agarwal and claims 9-11 were rejected over Sakurai in view of Agarwal. Applicant respectfully traverses this rejection.

These claims are submitted to be patentable over Csanitz and Sakurai for the reasons advanced above. The Examiner's further reliance on Agarwal does not overcome the deficiencies of the primary references. With respect to claim 9, in particular, it is noted that Agarwal discloses a heater made of FiN, AlN, and SiC. Claim 9, however, is characterized in particular in that the heater itself as a high-emissivity, the heater is provided within the cup-shaped solid electrolyte, and a clearance of 0.1 mm or more is formed between the heater and the internal electrode. Therefore, in accordance with the invention as recited in claim 9, the heat radiated from the heater is effectively transmitted to the solid electrolyte without increasing the temperature of the heater more than is needed, and the solid electrolyte reaches a temperature in the activation range as early as possible while suppressing the solid electrolyte from being broken. Thus, in accordance with the present invention, to solve the problem of heat accumulation of the heater disposed within the solid electrolyte, the high-emissivity layer is provided on the outer surface of the heater where the heater itself is formed from a material having high-emissivity. In Agarwal, because the heater is disposed around the solid electrolyte, there is no problem of heat accumulation as with a heater disposed

within the solid electrolyte. Thus, even if the teachings of Sakurai could be combined with Agarwal the structure specified in claim 9 and its advantages would still not be anticipated nor obvious. Reconsideration and withdrawal of this rejection is solicited.

Claims 1-4, 6-8, 18 and 19 were rejected under 35 U.S.C. 103(a) as unpatentable over Sakurai in view of Hackh's. Applicant respectfully traverses this rejection.

In Sakurai and Hackh's there is no teaching nor suggestion of a clearance formed between a high-emissivity layer and an internal electrode. Further, there is no disclosure of the characteristics of claims 1 and 6, in which the high-emissivity layer is provided on the surface of the internal electrode or the surface of the heater, or that the electrode contains a material having a high-emissivity of more than 0.3. Thus, even if Sakurai could be combined with Hackh's, the features of the invention claimed, whereby heat is transferred from the heater to the solid electrolyte to heat the solid electrolyte by using a heat-radiating effect of the high-emissivity layer, would still not be anticipated nor obvious.

Claim 5 was also rejected over the Sakurai/Hackh's combination when further taken in view of Agarwal. For the reasons advanced above it is submitted that the Sakurai/Hackh's combination fails to teach or suggest the invention claimed. The Examiner's further reliance upon Agarwal does not overcome the deficiencies of the primary combination and it is therefore submitted that this rejection should be withdrawn as well.

Claim 16 and 17 were rejected over the Sakurai/Hackh's combination and further in view of Topp. Applicant respectfully traverses this rejection.

The Examiner's primary combination does not teach or suggest the claimed invention. The Examiner's further reliance upon Topp does not overcome the deficiencies of the primary combination. It is therefore submitted that these claims are allowable as well.

Claims 15-17 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. The claims have been reviewed and revised so as to obviate the grounds for this rejection.

All objections and rejections having been addressed it is respectfully submitted that the present application is in condition for allowance and a notice to that effect is solicited.

Respectfully submitted,

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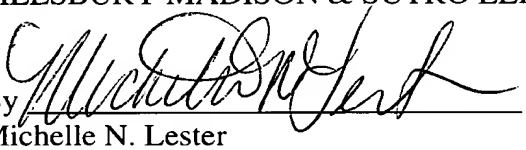
By 
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